Тайбуурулдун образы. Кыз Сайкал Манаска: «Балаңа энчиледим, эркек балалуу болсоң, минсин», деп Тайбуурулду «абайлап жабуу жаптырып, башына үкү тактырып, бирөөнүн көзү тиет деп, жан көрбөс жерге бактырып, өз колу менен жеткирет».

Кубанычын да, кайгысын да Семетей менен тең бөлүшүп, чапканда күлүк, согушта качса джеткирбес ат, өз жеринде сейил ат болгон Тайбуурулдан Семетей тирүүлөй айрылат: Үмөтөй атасы Көкчөнүн кунун алганы келип, бөөдө өлөт, ошондо анын кунуна Бакайдын:

«Канатыңдан кайрылба,
Тайбуурулдан айрылба».

деген сөзүнө карабай, миң кашка бээ, миң кара төө, нарга жүктөп алтын-күмүш зер, эсепсиз мал менен Тайбуурулду тартат. Күйүткө алдырган Үмөтөйдүн энеси жылкынын кулагына эриген коргошун куйдуруп, ар бутунун муунуна үчтөн ийне кактырып, караңгы жерге бактырат. Ушундан улам, эл арасына «Тайбуурулдун тартуу болуп кеткени – Семетейдин ажалынын жеткени», деген сөз жайылат.

Корутунду. Эпосто баяндалган тулпардын баарын сүрөттөп отурсак, кагаздын бети да, калемдин сыясы да түтпөс. «Манас» эпосун ар башка варианттар боюнча алганыбызда ар башка тулпардын ысымы аталышы мүмкүн. Мисалы Сагымбай Орозбаковдун варианты боюнча 129 тулпардын ысымы берилет. Алардын ичинен 20 тулпар башка варианттарда да кездешкен тулпарлар.

Манасчылар бир эле учурда тулпардын тукумунун таза кандуулугу, күлүктүгү, зордугу өңдүү көрүнүшүн калбыр, өпкө, жез, капкан, үкү, аяк деген сыяктуу күнүмдүк тиричиликте колдонулган заттардын аталыштары аркылуу туюндурат.

Жогоруда айтылгандай, эпосто тулпарлар кеңири баяндалат жана ар бир негизги каармандын тулпары жөнүндө сөз козголот. Көп каармандардын бир нече тулпары болгон. Мисалы: Манастыкы – Аккула, Айбанбоз, Кыз Сайкалдыкы – Аксаргыл, Кер көкүл, Сары Буурул, Алмамбеттики – Кылжейрен, Сарала жана башкалар.

Тулпарлардын саны, терс же оң каармандыкыбы, сырткы келбети ар түрдүү болсо да, баарын бириктирген негизги окшоштук – тулпар бир гана жоокер атынын милдетин өтөбөстөн, ал баатырдын эмчектеш бир тууганындай, канатындай, ыйык колдоочусундай милдет аткарат. Эпосто баатыр менен тулпардын образы бирдей даражада сүрөттөлүүсү менен ар дайым бирин-бири толуктап, бири-бирине шайкеш келген «кош бирдиктүү» образда берилгенин көрөбүз.

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БИОМЕДИЦИНСКАЯ ИНЖЕНЕРИЯ

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BIOMEDICAL ENGINEERING

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In this work I want to introduce you relatively young yet worthy field of study. Biomedical Engineering is already around us and became a significant part of modern medicine and pop-science. Promising biotechnologies, sophisticated implants and prosthesis, devices that allow us to see not only inside the body, but also see it from different perspectives such as Positron emission technology (PET) shows us chemical processes occurring in our tissues. Technology broadens human abilities and broadens medicine's potential when applied to it.

Examples of Biomedical Engineering (BME) are all around us and there is really small amount of people who are not familiar with X-ray, highs and lows on ECG (electrocardiograph), contact lenses and dentist's room. BME is not limited only with medical devices, even though it is a very big part of it; BME has a broad spectrum and consists of numerous sub-disciplines. For example, a chemist in pharmacology is biomedical engineer and mechanical engineer that builds devices for physiotherapy is biomedical engineer as well. To explain what Biomedical Engineering is we need to define what engineering itself is and how this broad spectrum of disciplines unites into field of BME.

Engineering is application of knowledge in order to invent, design, build, maintain, research and improve. It is about making useful structures, devices, machines, systems, materials and processes. Engineering is design, useful application of scientific description to any purpose.

Science is a systematic enterprise that builds and organizes knowledge in the form of testable explanations and predictions about the universe. Science observes and describes.

Biomedical engineering is the use of application of science, mathematics, and engineering design principles to improve human health. Human physiology is the foundational science that distinguishes biomedical engineering from other forms of engineering; throughout history, advances in understanding of physiology have led to new biomedical engineering technology. Although science is very important for BME, there is difference between scientific discovery and engineering invention based on discovery.

For example, Penicillin is a group of antibiotics derived from *Penicillium* fungi. The discovery of penicillin is attributed to Scottish scientist and Nobel laureate Alexander Fleming in 1928. However, the development of penicillin for use as a medicine is attributed to the Australian Nobel laureate Howard Walter Florey, together with the German Nobel laureate Ernst Chain and the English biochemist Norman Heatley.

Another example took place in November 8, 1895, when German physics Professor Wilhelm Conrad Röntgen discovered the X-ray and noted that, while it could pass through human tissue, it could not pass through bone or metal. The first use of X-rays under clinical conditions was by John Hall-Edwards in Birmingham, England on 11 January 1896, when he radiographed a needle stuck in the hand of an associate. On 14 February 1896, Hall-Edwards also became the first to use X-rays in a surgical operation.

The main purpose of biomedical engineering is to improve human health, treat and prevent diseases. This means that development direction is set by needs of people and by knowledge that people have. For instance, the main cause of death in the past were infectious diseases.

The Great Plague (1665–66) was the last major epidemic of the bubonic plague to occur in the Kingdom of England (part of modern-day United Kingdom). The Great Plague killed an estimated 100,000 people, or almost 25% of London's population. Plague is caused by the Yersinia pestis bacterium, which is usually transmitted through the bite of an infected rat flea.

Today we have several classes of antibiotics that are effective in treating bubonic plague. These include aminoglycosides such as streptomycin and gentamicin, tetracyclines (especially doxycycline), and the fluoroquinolone ciprofloxacin. Mortality associated with treated cases of bubonic plague is about 1–15%, compared to a mortality of 40–60% in untreated cases.

A man born in 20^{th}-21^{st} centuries is now more likely to die from heart disease, cancer, diabetes, Alzheimer's disease rather than from plague. These are the possible reasons of change in causes of death during 19^{th} to 20^{th} centuries:

- **Advances in clinical medicine.** Sulfonamide in 1937, penicillin in the 1940s.
- **Improvements in public health**. During the 20th century, an enormous improvement in public health led to an overall decrease in death rates. Infant mortality rates and maternal mortality rates have dramatically decreased. In the early 1900s, 6-9 women died in pregnancy-related complications for every 1,000 births, while 100 infants died before they were 1 year old. In 1999, at the end of the century, the infant mortality rate in the United States declined more than 90% to 7.2 deaths per 1,000 live births. Similarly, maternal mortality rates declined almost 99% to less than 0.1 reported deaths per 1,000 live births. There are a variety of causes for this steep decline in death rates in the 20th century:
  - Environmental interventions
  - Improvement in nutrition
  - Improved access to health care
  - Improvements in surveillance and monitoring disease
  - Increases in education levels
  - Improvement in standards of living.
- **Increased life expectancy.** People treated from infectious diseases live longer and have increased chances to die from something else.
- **Change in lifestyle.** People in the past were more physically active before industrial and post-industrial society. Most of the labor was hands-on. In the opposite, most of the working population today is involved in the sitting kind of lifestyle and physically active jobs that used to be major in the past now is in minority.
- **Lack of information.** People in the past had diseases like cancer, heart diseases, etc. However, they didn't have diagnostic technology we have today and this could be the reason why we don't have information about cancer in Middle Ages.

Biomedical engineering is relatively young field of study; however, it had enormous impact on modern healthcare. Imaging technology like x-ray allows us to see the body from the inside, Positron emission tomography

(PET) shows the chemical processes occurring in the body, technologies replacing organ functions, and implants, etc. are all common today. There is a lot of work done; however, the great thing about biomedical engineering is that there are many things to work on. Tissue engineering uses combination of cells, engineering and materials methods, and suitable biochemical and physicochemical factors to improve or replace biological functions. Researchers have grown solid jawbones and tracheas from human stem cells towards this end. Several artificial urinary bladders have been grown in laboratories and transplanted successfully into human patients. Advance in tissue engineering potentially solves the problem of compatibility in organ transplantation.

There are also artificial organs that are made from biocompatible non-biological materials. For example, dental implants that are available today. Yet most of the implants needs constant and reliable energy supplement to fully replace the organ, which is the main disadvantage in most of the implants and in artificial hearts in particular.

Progress in electronic engineering, computer engineering and neuroscience allowed group of researchers in John Hopkin's University to build Modular Prosthetic Limb, which is a sophisticated mechanical arm under neural control of a man. Hugh Herr, a professor in MIT Media Lab, built his own prosthetic legs that are able to replace the functions of his lost legs and even overcome the normal capabilities of biological limbs. The brain-machine interface can be the point where differences between biological and non-biological limbs disappears.

Gene therapy is probably the most regulated research branch. Early clinical failures led to dismissals of gene therapy. Clinical successes since 2006 regained researcher's attention, although as of 2014, it was still largely an experimental technique. These include treatment of retinal disease Leber's congenital amaurosis, X-linked SCID (severe combined immunodeficiency), ADA-SCID, adrenoleukodystrophy, chronic lymphocytic leukemia (CLL), acute lymphocytic leukemia (ALL), multiple myeloma, haemophilia (a group of hereditary genetic disorders that impair the body's ability to control blood clotting) and Parkinson's disease. Between 2013 and April 2014, US companies invested over $600 million in the field.

Although today many of diseases can be treated, there are places where plague and infectious diseases remain the main cause of death. This means that antibiotics and medicines should become more available because it is a work of biomedical engineers not only to help to cure the disease but also to make the treatment more available. This variety of sub-disciplines is the direct result of the idea of biomedical engineering: applying science to medicine. Biomedical engineering is the fact that engineering will not leave medicine, instead, it seeks to close the gap between these two fields.

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SOFTWARE ENGINEERING IN OUR LIFE

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The paper deals with notion of Software Engineering. What Is Software Engineering?
Software plays a critical role in our daily life. It behinds our banking system's.
Our telephones depend on it…

What is Software Engineering?

Software Engineering – is an engineering discipline, connected with all aspects of manufacture of Software from beginning stages of creating specification until maintenance and support of system after commissioning. There are two passphrases in this definition of Software Engineering:

- Engineering discipline
- All aspects of manufacture of Software

Engineering discipline. Engineers – are that specialists, performing practical job and achieve practical results. A scientist is able to say: problem is unsolvable in the frame of existing theory and it will be as scientific result worthy of publication and defense of thesis.

For problem solving engineers is applying theories, methods and means, useful for solving this problem, however they apply them selectively and always try to find solutions, even in that cases, when there is not exist any theory or methods according to this problem yet. In these cases engineers find method or means for problem solving, apply it and response for these means, because these means have not been tested yet. The set of engineering methods or fashions, which are not justified theoretically, however which were given repeated confirmation on practice, plays a big practical role. In Software Engineering, they called as "best practices".

Engineers works in the conditions of limited resources: time, financing and organizational (equipment, technic, people). By the other words, the product must be developed until deadlines, in the frame of allotted financing sources, equipment and people.